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Competitive Cities, Metropolitan Networks, and Economic Development Strategies

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I. Economic Development Strategies in Other States¹

-Richard Henderson

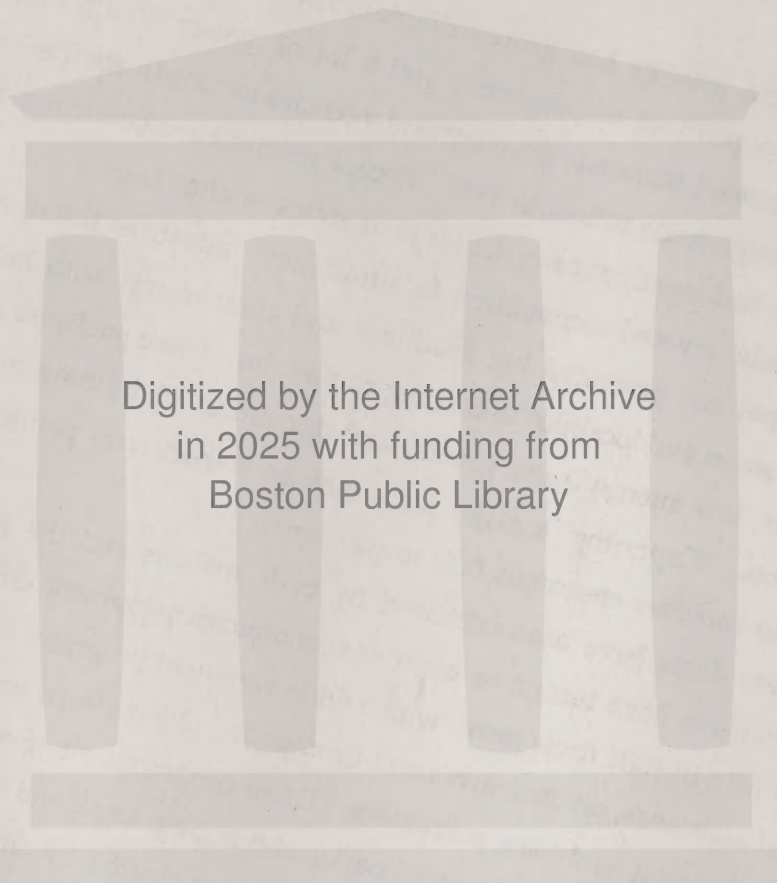
State economic development activity has grown dramatically in the past decade, with virtually every state offering a plethora of programs, and a lot of money, to aid and guide growth. Over 30 states have created economic development agencies to coordinate these efforts, and 37 states maintained foreign trade offices in 1987. Recent studies have confirmed that the best growth strategies have had significant impact on their states' economies.

Throughout the decade, fevered competition to attract new industries through tax and financial incentive packages has generated big headlines and controversy, with hundreds of millions being risked by states and localities to lure big companies. These packages involve tax breaks for up to 20 years, low-interest loans, grants, land donations, job training subsidies and dozens of other elements. "Capturing" a major plant may be a short-term political coup, but taxpayers often have to shoulder enormous bills to pay for it.

Increasingly these deals have been criticized by both analysts and the public as poor bargains, and governments have turned to broader economic development efforts. Many are designed to directly help in-state firms grow, with a wide variety of programs offering financial incentives, technical assistance, tax incentives and promotion. Other efforts encourage exports, through promotion, training, and loan guarantees. These programs, along with such tools as venture capital funds and incubator industrial parks, aim to help small and medium size firms to thrive, based on recent findings that most new jobs are created by small businesses and entrepreneurs.

Finally, states have realized that the fundamental local government activities of providing high quality education and infrastructure are critical to business health, and are placing great emphasis on supporting research universities, community colleges and technical schools, as well as transportation and utilities services. Job training programs are receiving substantial funding. Not only do such programs create better opportunities and improve daily life for citizens, but companies thrive based on an area's strengths in human and physical resources, not merely on

¹ This paper and those that follow (II. A Summary of Michael Porter's The Competitive Advantage of Nations and III. The Urban and Metropolitan Network), are from The Howell Report; Technical Appendix, Volumes One and Two, Boston Redevelopment Authority, November 8, 1990.



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the basis of tax breaks or grants. Measures comparing states' "business climates" in the early 1980s stressed factors such as low taxes, wages, energy costs, and social benefits, but more recent studies have stressed factors such as the availability of capital, the quality of education and research, physical infrastructure support, and the active role of government policy to stimulate future business formation, as being most important to a strong economy.

Behind these different policy priorities lie three different strategies that states have pursued to maintain or expand their economies. As defined by John Jackson, they are:

1. Maintain existing industries and firms, with their current technologies, products, and markets;
2. Recruit to the state firms from other areas or induce out of state firms to build branch plants within the state;
3. Create new industries and enterprises, either through the birth of new firms or by the transformation of existing firms.

While many states pursue two or all three simultaneously, these strategies require different public policy approaches, which may conflict with each other. The first, maintenance-based strategy aims to create a "good business climate" by lowering business costs; the second, recruitment-based strategy also often relies on low business costs to attract firms. For low-wage, low land-cost states these are favored strategies, since wages in particular are the predominate business cost.

In order to compete with less-industrialized states following the "low business costs" strategies, older industrialized states have had to overcome their higher wages and property costs through deep tax breaks and subsidies. Because of the high cost and unclear results of these subsidies, it is these states which have turned most enthusiastically to the third strategy, which seeks industrial creation and transformation based on innovation and entrepreneurship. Government policies to support the third strategy include high-quality public services in education, infrastructure, and environment, along with programs targeted at improving research and technology transfer, availability of capital and facilities to entrepreneurs, and labor force training.

These policies cost money, so this approach may conflict with a low-tax, low-cost development strategy. But the industrial creation strategy may also serve to recruit new firms and improve existing industries. Existing firms can be helped to transform themselves into innovators utilizing new technologies developed in conjunction with universities and research centers, while out of state firms may be lured by the presence of an innovative workforce and

business/government community. The strategy is also based on the notion that "quality of life" is at least as important to businesses as financial incentives: that a beautiful and clean environment, efficient transportation, affordable housing, and stable communities will attract and retain good employees and employers.

Building on the entrepreneurial climate that fostered its high tech and services economy, Massachusetts has been a leader in the "industry creation" strategy of economic development over the last 15 years, starting dozens of programs that have been emulated by other states. The Commonwealth still professes to be a leader in the field. While its approach has long been ad hoc rather than explicitly outlined, the state has a opportunity to move beyond a collection of loosely related programs to create a true plan for economic growth. In January of this year Governor Dukakis called an Economic Summit to present "Winning the Nineties: An Economic Strategy for Massachusetts." This draft document noted many existing State programs and private initiatives, proposed new activities, and outlined infrastructure improvements planned for the next decade. But insufficient progress is being made in many of the areas the strategy identified as most important: stabilizing the State's fiscal situation while providing sufficient resources for major investments; a renewed commitment to education and training; the ambitious program of public works investment; and other areas. Meanwhile, most other states have caught up to Massachusetts and are devoting substantial resources to similar measures.

Perhaps Massachusetts' initiatives will move forward when the fiscal situation is resolved. However, even with full funding the strategy merely duplicates what many other states are doing to encourage economic growth. The "industry creation" strategy has now been adopted by most states, with some of them outlining a more formal and comprehensive strategy than is expressed in the "Winning the Nineties" document. And a few of our competitors are taking a further step in combining economic policymaking with comprehensive land-use planning to ensure that public and private investment are brought together in areas most suited to growth. Massachusetts should consider the examples of economic development strategies provided by other states.

Michigan

Michigan's 1984 strategy document, *The Path to Prosperity*, outlined three paths the troubled state economy might take: Michigan could Get Poor, Get Out, or Get Smart. The Get Poor strategy would aim to compete with other regions by lowering business costs, particularly

Michigan's relatively high manufacturing wages. The state's plants would continue to churn out standardized, mass-produced goods that could be made anywhere in the world. This strategy was considered unconscionable since this would deliberately reduce workers' standards of living, till they reached the level not only of poorer states but of competitor countries such as Korea. The second strategy would have Michigan Get Out of the durable goods manufacturing in which it specialized, to pursue "growth" industries such as computers and financial services. This also was rejected, since Michigan could not hope to compete with regions such as Boston and New York that already specialized in these industries.

Michigan instead chose the Get Smart strategy: to focus resources on improving the technology and skills that go into making automobiles, steel, machinery and other durable goods that had long been the mainstay of the State's economy. Michigan already had most of the factors that go into a strong manufacturing economy: a vast industrial infrastructure of transportation, physical plant, labor, suppliers. What it lacked was the application of new technology and highly-skilled labor to create high-quality, specialized and ever-improving products in these same industries. By the time such products could be mass-produced anywhere in the world, Michigan firms would already have moved on to an improved product using new technologies and skills. By keeping on the cutting edge of quality and innovation, Michigan's traditional industries would transform themselves into "high-tech."

To assist in and accelerate this transformation, state and local government would:

- invest heavily in applied research specializing in industrial technology;
- ensure technology transfer between research centers and businesses;
- invest State Retirement funds as venture capital;
- provide quality business services such as job training, efficient environmental permitting, and information on site availability;
- establish minimum standards for high school graduation;
- improve vocational education and retraining programs for displaced workers;
- create infrastructure investment policies sensitive to demands of the economy;
- build improved access to jobs for impoverished city-center residents, through skill training and regional transit;
- improve urban services to attract business back to city centers.

Florida

Florida appears to be at the opposite end of the economic spectrum from Michigan: fast-growing, attracting many firms from the North with its low taxes, low costs, and sunny climate. But the emerging State economic development strategy bears remarkable resemblance to that of Michigan. The Florida Chamber's *Cornerstone: Foundations for Economic Leadership* of 1989 warns that competing on the basis of low business costs is a flawed economic development attraction strategy. Competitors in other states or countries can undercut costs through even lower wages, while the State's workers suffer with very low paying jobs. Taxes are among the lowest in the nation, but are unstable, and government services are poor. Florida is 45th among all states in highway spending; it ranks 49th in high school graduation, and 48th in the number of scientists and engineers per 1,000 workers. Warns the report, "businesses increasingly recognize the state doesn't have the fiscal basis to pay for the economic infrastructure required for the future."

Against this background, Florida has decided to supplant its low-cost strategy with an industry creation strategy, targeting growth in high value added manufacturing and traded services. The State has identified eleven industrial clusters in which Florida already specializes. While Biotechnology, Instruments and Controls, and Aerospace are among them, not all fit the usual "high-tech" label; they include Apparel and Textiles, Agriculture and Food Processing, Lumber, Wood Products, and Furniture, Film and Tourism, and Recycling industries. The programs envisioned to assist growth in these areas bear great resemblance to those of Michigan and most other states:

- improved education, especially to meet vocational needs of industry;
- a state venture capital fund to leverage private investment in start-ups and expansions;
- better business services;
- a stable transport trust fund for an infrastructure policy linked more explicitly to the needs of industry;
- goals to increase state exports and trade through its ports;
- measures to make new technology more accessible to businesses;
- improvements in the quality of life, especially regarding crime;
- and strategies that close the gap between distressed and thriving areas.

Florida has a longer way to go in pursuing this strategy than a state like Massachusetts, partly because it has already established a "low cost" reputation. The mature mass production firms that moved to the state with promises of low taxes are often unwilling to support the increased tax burdens necessary for improved public services. A recent imposition of a sales tax on services had to be abandoned; as in most Northeastern states, revenue estimates from existing taxes are being revised downward this year. Communities are looking either to halt development because of overloaded infrastructure, or to place the costs of necessary infrastructure improvements on new development through impact fees. Florida also lacks the technology and capital so critical to new industry growth: it is 45th among states in level of Research and Development per capita, and 41st in commercial and industrial loans per 1,000 workers.

The irony of this strategy is clear: while low-tax Florida attempts to provide better public services and encourage the entrepreneurial climate of a Massachusetts, the Commonwealth threatens to eviscerate its public services in striving to be a low-tax state.

Minnesota

In contrast to Florida, Minnesota has harsh winters and high taxes. But the state has done well economically, relative to other midwestern states in particular. And it believes its success is based on already having the kind of excellent public services Florida wishes to provide in the future. Minnesota's "indirect" economic development strategy encompasses education, tax and fiscal policy, natural resources, and transportation, led by a Department of Trade and Economic Development (DTED) reorganized in 1986. The state has many of the incentive programs offered by most states to attract business, and is creating an organization independent of government to make long-term investments in research and technology. This Greater Minnesota Corporation will be funded by a new state lottery, and use a peer review process to guide its investments.

Minnesota lays claim to the nation's best high school graduation rate (Massachusetts is close behind), to excellent transportation, public safety, and adequate water supplies. It has stressed efficiency in its public services, with a customer-driven quality improvement program instituted at the DTED. And while its tax burden is high, the burden does not fall heavily on businesses. In 1987, Minnesota lowered its top corporate income tax rate; in 1989, it eliminated the sales tax on new machinery and equipment for manufacturing firms. The state plans to lower business property taxes during the early 1990s. Corporate income taxes are calculated in

a way that benefits firms exporting out of state.

Personal income taxes are high, but the most progressive in the nation. Living costs are low relative to competitor regions such as Boston, New York and San Francisco, and are comparable to costs in Dallas and Denver.

Finally, Minnesota prides itself on the stability of its tax system, balanced equally among income, sales and property revenues, and boasting one of the largest budget reserves in the nation. The state considers future consistency at least as important as current cost as a factor in business decisions. Writes Lee Munnich of DTED: "If a state has low taxes but is in fiscal trouble or has underinvested in education, a businessperson may wonder whether this is an appropriate risk for the future. Likewise, a state which is managing its finances prudently is likely to inspire greater confidence."

New York

New York State's 1989-90 Strategic Plan for Economic Development, *State of the Future*, illustrates the range of programs that many states are implementing to help their business and citizens compete in the global economy. In addition to improving education and infrastructure, the basic strategy includes:

Improving the Productivity and Competitiveness of Manufacturing. New York proposes to create an Empire State Manufacturing Service which would use existing and new programs to help small and medium size businesses thrive. Assistance, in active partnership with business and labor, would be in eight areas: comprehensive problem assessment; technical assistance for introducing productivity improvements; training in new skills for workers and managers; assistance for child care; technological transfer and innovation; financing of new plant and equipment; assistance in employee ownership and participation; and identification and development of new products and markets. To provide adequate finance for modernizing companies, the service would require increased bonding authority of the Job Development Authority, and a linked deposit program for industrial development.

Building a Competitive Workforce. The strategy proposes an Empire State Training Fund, financed through the state unemployment insurance tax without increased costs to employers, for job training programs. It also recommends implementing new business-oriented child and dependent care services, and evaluating alternative approaches to parental leave.

Competing in World Markets. Comprehensive export trade promotion is necessary for improved international trade analysis, technical assistance to new exporters, and support for trade development organizations. The strategy stresses research and policy development.

Helping Revitalize Urban Areas, Regions and Communities. The report recommends launching a new Urban and Community Development program; ensuring that economic development services reach all regions; linking housing and targeted human services programs with the existing Economic Development Zones program; focusing on key regional industries and projects, such as forest products and waterfront development; and exploring the feasibility of using State surplus land for housing and economic development purposes.

Retaining a Leading Edge in Services: Financial, Telecommunications, and Tourism. The state should implement a strategy for financial services based on workforce and infrastructure needs; strengthen telecommunications policy regarding regulation and technological innovation; promote multi-season tourism, consider creating a new tourism financing program, and better resolve tourism-related environmental and regulatory problems.

Assisting New, Small, and Minority and Women's Business Development. New York should expand its Entrepreneurial Assistance Program; help rural businesses with economic development programs; increase State and federal procurement opportunities for small businesses; carry out a minority/women owned business development initiative in capital construction; and explore ways to help small businesses provide health coverage to workers.

Promoting Advanced Technologies. The strategy calls for setting priorities for State investment through an Advanced Technology Review Process; updating strategic planning and pursuing federal support in high technology; increasing minority student involvement in science and engineering; considering the establishment of an urban, youth-oriented science museum.

Washington State

Entitled *Washington Works Worldwide*, this November 1988 long-term economic development strategy focuses on enhancing the state's competitive role in the world economy. Already the most trade-dependent state economy in America, Washington hopes to become an important trade hub equidistant to Asia and Europe. But the state recognizes its weaknesses in a more competitive global economy, where prices for the state's basic primary commodities are low and manufacturers in other nations outcompete local firms through low cost production of standardized goods and highly flexible, resource- and time-efficient production of quality specialized products. Like the other state plans described, Washington's aims at transforming state industry to produce "high value-added, high-quality, highly-innovative, and constantly-improved goods for the global marketplace." But its strategy is more thoughtful, thorough, and internationally-/environmentally-minded than most.

The strategy recognizes that Washington's educational system, workforce and production methods, infrastructure, and technology must not only compare well to those of other states, but must stack up against the finest in the world. Students must be exposed to foreign languages and nations, computers and technology, cooperative problem-solving and risk-taking. Managers and workers must have access to training programs and new production methods stressing flexibility, innovation and partnership. Entrepreneurs, officials, workers and educators should work together at the local level to strengthen local economies. Quality of life and environment are central to the strategy, based on the belief that "business climate and quality of life are becoming increasingly synonymous." It calls for comprehensive land-use plan, combined with major investments in ports and transportation and energy networks. A statewide service could mediate disputes over development and natural resources.

To develop a more competitive business climate, financing for innovative new businesses, and promotion of new products, will go hand in hand with mechanisms to transfer technology and new product ideas from State research institutions to businesses. Public financing would center in a Development Finance Authority, but also would include investments by state pension funds. The strategy also recommends creating a program to recruit domestic and foreign investment for joint ventures.

Tax and regulatory reform are also part of the strategy. Washington's tax structure is considered unbalanced, regressive, and too complex; reform would not aim at reducing overall taxation so much as making it more conducive to investment and economic diversity. Regulatory

reform is aimed at achieving "timely response, predictable outcomes, and direct input by those affected by the decisions."

Infrastructure improvements should focus on three areas: information, transportation, and energy. The strategy calls for a worldwide market information and analysis network to be used by state firms; encouraging application and use of telecommunications advances; maintaining and improving ports, airports and roads; developing comprehensive mass transit systems; developing alternative energy systems and adopting conservation standards for new homes; and a push on federal and state levels to designate the Puget Sound area as an international center for energy research and hazardous/toxic waste disposal technology.

New Jersey

With ports in New York Harbor and on the Delaware boasting far more European trade than Boston, the nation's largest pharmaceutical industry, and strength in instruments, computers and other communications technology, New Jersey is an attractive place for many of the same industries on which Massachusetts expects to thrive. While New Jersey does not have a comprehensive economic development plan, it is developing a statewide development and redevelopment plan that includes an economic development element.

With its growth plan, New Jersey hopes to spur economic development by making investments in core urban areas while protecting against suburban sprawl and environmental degradation. As the centerpiece of the state's development strategy, the plan would ensure that future growth maintains or improves residents' quality of life, especially in the poorer urban and rural communities. The plan would also enhance New Jersey's competitive status in the world economy by guaranteeing this balanced growth. The plan is controversial and has not yet been approved, but even the process of creating it has brought such diverse issues of economic development, environment, housing and public works together for citizens, government and business.

The Plan's economic rationale is that New Jersey's prosperity may be threatened by the spillover costs associated with uncoordinated economic development. In older urban and suburban areas, a diminished tax base brings poorer public services and the deterioration of vast infrastructure investments of the past. In fringe areas, businesses attracted by low land costs create growth in population, traffic and environmental burdens that public services cannot meet. A deteriorating environment creates heavy costs for business in solid waste disposal, water

supplies, and pollution at the shore resorts. Land costs rise for housing in competition with industrial land, and businesses locate far from residential centers, creating high housing and commuting costs for employees. To remedy these negative externalities, the plan would:

- ensure that adequate capital facilities and utility services exist where growth occurs;
- promote affordable housing close to employment growth areas, and better transportation links between residences and employers;
- focus redevelopment programs on older cities and suburbs, including location of State and cultural facilities, mixed-use and adaptive reuse, neighborhood targeting, and local development corporations;
- ensure that development in rural areas is concentrated in towns and corridor centers;
- streamline regulations for economic development that meets the goals of the plan.

California

As a huge, fast-growing, economically diverse state with leadership positions in many advanced technologies, California's prosperity seems assured. But as in Massachusetts, prosperity itself has brought problems that may inhibit economic growth, and decreased Federal spending on the military will strongly affect Southern California's economy. As population continues to swell, California's highway, water and school systems have difficulty keeping up, while strict taxing and spending limits prevent government from adequately addressing needs.

In 1988 the State issued *Vision: California 2010*, an economic development strategy "based on wise investment" in people and economic infrastructure, and on a "fiscal and legal environment that supports wealth creation." The strategy is to be implemented by both public and private sectors, not necessarily in close partnership but always aiming in the same direction, doing what each does best. Thus while making "higher education more responsive to the changing economy" involves business and government working together, business is left on its own to "improve organization of work" to enhance creativity and flexibility. While the State exhorts businesses to adopt such strategies as just-in-time inventory, greater decision-making by workers, and closer ties with suppliers and customers, but the State does not see a role for government programs or incentives to encourage this adoption.

This somewhat conservative approach adheres in the strategy for infrastructure as well, where better management and market mechanisms are stressed over increased government spending for new facilities. Transportation can be improved not only through new roads but

by application of better management, new technologies, and disincentives to peak-hour use. Growing water demands can be met not by adding capacity but by pricing water to reflect its true value, causing great changes in agricultural and urban consumption patterns.

California's strategy to spur research and development is a strong one, owing partly to the quality and size of the state's university system. The universities would support Centers of Excellence in strategic technologies, develop guidelines for patents, licensing and royalties that encourage technology transfer, develop technology extension services for firms, and play a stronger role in regional economic development. The state government could set up a science and technology office, and provide "seed funds" matched by industry investment in new product/process technology. In the areas of telecommunications and energy, state regulatory policy should encourage innovation and competition.

Its recommendations regarding fiscal and legal issues set California's strategy apart from others. The strategy recognizes that "California's climate for development is made up of state and local fiscal practices, its legal code, and regulations." In the fiscal area, the strategy calls for privatization of public services where appropriate, and better management of public physical assets, but also recommends that current strict limits on government spending- a rate of about \$2,000 per person in 1986 dollars- be reexamined in light of education, infrastructure and other needs. Environmental regulations should be adjusted to focus on the most important, long-term environmental threats and the most cost-effective ways of managing them. Market incentives should be applied to pollution abatement. Finally, civil liability reforms are needed to reduce excess damages, high transactional costs, and inhibition of innovation from fear of lawsuits.

In an assessment of the future of state and local economic development planning, *American City and County* magazine has noted the increasing sophistication of growth policies. State strategies are evolving towards those of New Jersey, Washington, and others where economic, social and environmental issues converge. Both public and private sectors are realizing that an economy thrives on more than tax breaks, the article concludes.

Private industry will continue to seek the elusive quality of life along with the amenities of financial incentives, transportation access, water and wastewater service, affordable housing and operating costs, market and labor. But today, companies seek out the long-term implications. They search for stability, in labor force and taxes, in public opinion and growth patterns. Communities are responding by focusing their resources on developing the programs and plans that will allow economic development while retaining the unique character and style

of their communities.²

² Quinn, Barbara "America's Economic Revival." *American City and County*, Nov. 1988

Economic Development Initiatives in Selected States, 1986

	Cal	Col	Conn	Fla	Ga	Ill	Ky	Md	Mass	Mich	Minn	NJ	NY	NC	Ohio	Ore	Penn	Tenn	Tex	Virg	Wash	Wis
Customized Industrial Training	*	*	*	*	*	*	*	*	*	*		*	*	*	*		*	*	*	*		*
Direct State Loans	*		*	*		*	*	*		*	*	*	*		*	*	*		*			
Enterprise Zones	*		*	*	*	*	*	*	*	*	*	*	*		*	*	*		*	*	*	
State Industrial Dev't Bonds	*		*			*	*	*	*	*	*	*	*		*	*				*		*
Bond or Loan Guarantees	*		*			*		*	*	*		*		*	*	*						*
State Grants						*		*		*			*									*
Venture Capital Corporations			*						*	*			*			*						*
Umbrella Bonds (Small Projects)			*			*	*	*					*		*	*		*	*	*	*	*
Investment/Job Creation Tax Credit		*	*	*				*	*	*			*		*		*	*	*	*	*	*
Property Tax Abatement		*	*	*		*		*	*	*	*	*	*		*		*	*	*	*	*	*
Research & Development Tax Credit	*							*	*			*	*				*	*	*	*	*	*

Source: National Association of State Development Agencies

Elements of Economic Development Strategies in Selected States

Strategy	California	Florida	Mass	Michigan	Minn	NJ	NY	Wash
Improve Education/Job Training	*	*	*	*	*	*	*	*
Increase Infrastructure Investment	*	*	*	*	*	*	*	*
Venture Capital Investing		*	*	*	*		*	
Assist Technology Transfer	*	*	*	*	*		*	*
Target Regions & Localities		*	*	*		*	*	*
Streamline Regulations	*				*	*		*
Aid Affordable Housing			*			*	*	
Promote Exports		*	*				*	*
Services to Small Business		*		*		*	*	
Improve Land Use/Environment	*	*				*		*
Enterprise Zones			*		*	*	*	
Assist Services Industries		*					*	

Sources: State Economic Strategy Plans

II. A Summary of Michael Porter's The Competitive Advantage of Nations

-Richard Henderson

Porter's central aim is to supplant classical economics' notion of a nation's *comparative* advantage with a new paradigm of *competitive* advantage. Comparative advantage holds that a nation's success in specific industries is based on its particular mix of such production factors as land, labor, and natural resources; a nation "will export those goods that make most use of the factors in which it is relatively well endowed." One country might have an advantage in steel production, for example, because it contains iron ore, coal, and the capital to build the necessary transport and production facilities; another might have an advantage in textiles because of cotton farms and cheap labor. But these basic factors no longer necessarily account for the competitive strength of advanced industries and economies, Porter argues. Macroeconomic variables like exchange rates, interest rates, and government deficits also play a lesser role than is generally believed, writes Porter, who also discounts the impact of government subsidy, protection, and promotion of targeted industries.

In a world of rapid transport of materials, knowledge, and capital, traditional factors of comparative advantage such as proximity to raw materials, a modestly-educated workforce, or rich investors play a smaller and smaller role. Global corporations producing, borrowing, buying and selling internationally have learned to circumvent shortages of credit, materials or labor, and can even compensate for such factors as trade barriers and exchange rate fluctuations.

Porter provides numerous examples of an industry or nation thriving with many traditionally important factors weighed against it. Indeed, *disadvantages* in classical theory have been in some cases important spurs to industrial success. What really counts is an environment that encourages innovation, which can turn any handicap into a competitive advantage through productivity growth.

There is growing agreement among theorists and managers on how today's most competitive companies succeed. As Porter puts it, companies achieve competitive advantage through innovation, whether in product design, production processes, marketing or training methods. Successful companies must innovate continually to sustain their advantage against imitators. They must not succumb to the temptation to rely on a protected market or

abundant cheap labor, but instead assume this edge will be wiped out by competitors; continued prosperity comes by creating new advantages in such areas as quality, features, and new product innovation. Thus Porter turns what traditional industrial location theory has considered a good thing— an operating environment featuring such factors as cheap labor and energy, minimal environmental regulations, protected consumer markets or raw materials close at hand— into a potential trap.

Porter defines an entirely different context within which a firm or industry can operate successfully. He believes that even for a multinational firm, the home nation creates and sustains its competitive advantages, and that a nation must provide an environment that enables companies to improve and innovate faster than foreign rivals. Such an environment is outlined by Porter as "The Diamond of National Advantage." The diamond consists of four broad, interrelated attributes of a nation, "the playing field that each nation establishes and operates for its industries." They are:

Factor conditions, such as skilled labor or infrastructure necessary to compete in a given industry. Porter believes that today's most important factors are created rather than inherited. They involve sustained and heavy investment, and are increasingly tied to special needs of particular industries. A knowledge-intensive industry will not thrive merely on the basis of a general workforce educated to high school or even college levels; to gain real competitive advantage it requires a workforce with special skills related to that industry. Targeted educational or research programs, venture capital, legal and consulting firms familiar with specific industries-- "these are factors more scarce, more difficult for foreign competitors to imitate." Porter believes competitive advantage also "results from the presence of world-class institutions that first create specialized factors and then continually work to upgrade them." Such institutions and special services Porter goes on to argue that selective disadvantages in basic factors can force an industry or nation towards the factor creation outlined above. If these disadvantages later spread to other nations-- for example, increasing labor shortages or tough environmental regulations in many industrialized countries-- the nation that first faced such conditions and devised methods of overcoming them will find itself with a competitive advantage.

Demand conditions, meaning the nature of demand in the home country for an industry's product or service. Even a product sold worldwide usually is shaped by the needs and preferences of the country in which it was developed. "Nations gain competitive advantage in industries where the home demand gives their companies a clearer or earlier picture of emerging buyer needs," writes Porter, "and where demanding buyers pressure companies to innovate faster" than foreign rivals. Local circumstances of hot summers, high electricity costs and small homes pushed Japanese companies to develop energy efficient, quiet and compact air conditioners which proved attractive in other nations. As Americans' taste for fast food has spread around the world, much of the market has been captured by U.S. firms that had perfected at home the necessary production and marketing methods.

Related and supporting industries that are internationally competitive. Porter's third determinant of national advantage is a clustering of industries that exchange information and ideas as well as machine tools, components, and services. Even more important than easy access to goods and services is the innovation and upgrading encouraged by information exchange. Interacting companies can be the first to learn about and test new products, styles and manufacturing methods developed by each other; when a supplier is not tied solely to the domestic industry but is a world competitor on its own, the rate of innovation will increase.

Firm strategy, structure, and rivalry, denoting the conditions in the nation governing how companies are created, organized, and managed, as well as the nature of domestic rivalry. Firm strategy and structure may differ greatly across the world, with nations forming different but equally successful models appropriate both to the culture and to the needs of a particular industry. The furniture and footwear products of Italy are produced with a strategy emphasizing rapidly change, customized products and niche marketing, an approach suited to Italy's small or medium sized, often family-run firms that can make quick decisions. The strictly hierarchical, disciplined, technically-oriented structure of many German firms has led to success in technical/engineering industries demanding careful product development, precision manufacturing, and after-sale service. In each case the prevailing firm structure and strategy reflects the national temperament as well as the industry's requirements.

Other national factors play an important role in determining structure and strategy.

The characteristics of Germany's national capital market-- where shares, many held by banks, are held for the long term and rarely traded-- contrasts dramatically with that of the U.S., where short term results are paramount to shareholders, but risk capital is available. The German market suits firms in mature industries, where long-term investment in R&D and new facilities produces steady but moderate returns; the American market funds new industries and new companies, but its insistence on quarterly profits leads to underinvestment within mature industries. Management compensation practices can reflect this; Americans emphasize bonuses based on annual results rather than long-term success. The prestige and rewards a nation attaches to certain occupations and industries draws the best and brightest, also affecting where competitive advantage will exist.

Porter believes that rivalry among domestic firms "promotes improvement in all the other determinants" of competitive advantage outlined above. This rivalry is magnified when firms are geographically concentrated. Local rivals push each other to innovate and improve, as a faraway rival might, but do so more intensely: competing "not only for market share but also for people, for technical excellence," and for "bragging rights." While the success of foreign rivals is often blamed on "unfair" advantages, that of local competitors cannot be glossed over. Local firms generally share similar factor costs, home market access, and levels of government support or regulation; advantages are gained over local rivals only by moving beyond these areas to improve production efficiency and product quality and innovation. And Porter believes vigorous domestic competition pushes companies to enter and succeed in foreign markets.

To Porter, domestic rivalry and geographic concentration have the most power to create a well-functioning Diamond, promoting improvement in and magnifying the interaction of the four competitive determinants. These four points of the Diamond-- factor conditions, demand conditions, related and supporting industries, and firm strategy, structure, and rivalry-- are interdependent and form a self-reinforcing system or "Diamond." When one element is lacking or weak, it weakens the others, but competitive advantage grows very vigorously when all elements are present and strong. This is especially true when local rivals in an industry are clustered geographically, writes Porter. This stimulates the development of specialized factors, such as a pool of software engineering talent; domestic demand becomes more sophisticated as local consumers come to expect new and better products; related and supporting industries are pushed to deliver better components and machine

tools, or thrive on innovations emerging from the cluster; improvements in firm strategy and structure might be implemented by executives hired away from a successful local competitor. When the diamond is working, the local economy comes alive. Porter describes it thus:

Once a cluster forms, the whole group of industries becomes mutually supporting. Benefits flow forward, backward, and horizontally. Aggressive rivalry in one industry spreads to others in the cluster, through spin-offs, through the exercise of bargaining power, and through diversification by established companies. Entry from other industries within the cluster spurs upgrading by stimulating diversity in R&D approaches and facilitating the introduction of new strategies and skills. Through the conduits of suppliers or customers who have contact with multiple competitors, information flows freely and innovations diffuse rapidly. Interconnections within the cluster, often unanticipated, lead to perceptions of new ways of competing and new opportunities. The cluster becomes a vehicle for maintaining diversity and overcoming the inward focus, inertia, inflexibility, and accommodation among rivals that slows or blocks competitive upgrading and new entry.

The competitive advantage generated by a cluster for the firms and industries within is more powerful than the comparative advantage of factor cost and availability long used to explain economic success. Rather than seek comparative advantage by pursuing low wages and taxes, lax environmental regulations, or government subsidies and protection, private and public sector leaders might instead seek to create a dynamic cluster, by developing and stimulating the determinants of competitive advantage detailed by Michael Porter.

III. The Urban and Metropolitan Network

-Jeffrey Brown

New standards for analyzing urban areas are emerging. A recent report from Italy suggests that the process of innovation and urban dynamics are related in ways that conventional economic analysis cannot express. "Urban Structures, Technological Innovation and International Metropolitan Networks," by Sergio Conti and Giorgio Spriano (Fondazione Giovanni Agnelli, September 1989) identified the potential of "different urban systems in knowledge production and in innovation management and control in a fast changing international context." The study assessed European cities "according to their potential to control the global economy and their capacity to manage phases of industrial and technological transition."

The essay followed other recent studies that emphasized the presence of university structures and research centers, the availability of venture capital, and an efficient system of infrastructure as fundamental parts of a new theory of location of economic activity. Other conditions that were deemed favorable to the clustering of high technology operations included a superior level of environmental and cultural quality; widespread, varied consultancy and information services; and a sound, diversified economic base including administrative, commercial and cultural activities. These studies also stressed residential factors, including an urban area's attractiveness to highly qualified personnel, in their analysis of the location of innovative industry.

Conti and Spriano recognized the complexity of the innovation process and the different roles that urban systems may play in it. The authors noted that innovation may follow a number of logical paths to development, and the presence of favorable conditions "does not appear sufficient on its own to trigger a process of innovation." Consequently, their approach was (1) qualitative, to consider the elements that are capable of starting and sustaining a process of innovation, backed up by (2) a quantitative analysis of innovation in 47 western European cities.

Conti and Spriano identified eleven factors which affect innovative potential of urban areas:

1. The presence of one or more large industrial groups that have a high degree of control over markets for their goods and services. A large corporation would have much influence on the urban economic system in which its headquarters were located.
2. A varied industrial base including innovative industries as well as manufacturing and a variety of services. An urban area with consolidated development and a highly qualified workforce is most likely to have an appropriate economic base.
3. The presence of important university teaching and research structures which are accessible to both industrial operations and centers of pure and applied research.
4. The existence of private technological service and scientific research activities that furthers the spread of knowledge and contributes to the potential of the workforce.
5. Efficient systems for transportation and communication for rapid transfer of people and information.
6. Informal mechanisms to ease the exchange of information and circulation of ideas within the urban area, i.e., meetings, seminars, courses of study, exhibitions, social events, etc.
7. Availability of financial resources, including venture capital, to all sizes of firms.
8. A diverse network of business services, including consultancy, marketing, advertising, and computer services.
9. Planning programs or special structures that accommodate technology parks or coordinated activities of universities, laboratories, business services, and financial services.
10. Easy access to educational, cultural, recreational, and sports facilities.
11. High quality residential structures in the urban and suburban areas.

The authors suggested that "the concept of synergy underlines the fact that the potential of different metropolitan areas is due not so much to the 'quantity' or intensity of the single factors, as to their heterogeneous and complementary nature, and their ability to interact mutually." Consequently, urban areas with similar innovative factors may differ in the rate and intensity of economic development. Another aspect of innovation that is difficult to measure is the international relations factor. Conti and Spriano pointed out that large manufacturing firms are no longer the only exporters and agents in the international market. The service industries now face international competition and small and medium sized firms beginning to take on important exporting roles. All industries in an urban area are "now subject to international competition and have to be structured to operate outside the local context." Further, for an urban area to gain and hold an a position in the international market it needs management, financial and commercial skills as much as scientific and technological resources.

In their quantitative approach, Conti and Spriano analyzed 47 urban areas in ten western European countries as a multi-dimensional urban phenomenon. The four essential components of the analysis were:

1. economic: the expression of manufacturing, employment, and financial dimensions;
2. social: demographic factors and residential growth;
3. spatial: the trend of urban development and transformation;
4. specifically innovative: conditions which could activate the generation of knowledge.

The multi-faceted analysis reveals a complex, multiform European urban hierarchy. Each urban area has its own specialization and potential, but each is linked to other urban areas, with varying degrees of influence. The analysis "shows an extremely positive link with practically all the variables which quantify the location of the administrative centers of large industrial, commercial, insurance and banking operations, and of other business-oriented services, including those which indicate the importance of financial markets, and with the indicators which refer to cultural, scientific and technological resources, and to the presence of communication infrastructures."

A second component of the analysis indicated a correlation between innovation and "a positive industrial and technological transition," led by a diversified, dynamic industrial base,

featuring high technology, traditional industries, high added value in manufacturing, and high productivity per worker.

The authors noted that Paris, Frankfurt, and Milan could be described as urban areas that have "a complex, top level functional vitality, where administrative structures combine with innovative potential and superior industrial structures." Stuttgart and Torino were given as examples of metropolitan areas in positive transition where extremely high industrial potential combines with a negligible level of economic and administrative management functions. On the other hand, London, which has high management and control capability, has deteriorating industrial functions.

Finally, the authors suggest that competition between technological and industrial urban areas is stronger than competition between administrative centers; the latter's specialization is more fragile and has to adapt to any evolution taking place. Therefore, areas which have industrial potential as well as abundant administrative resources are likely to fare best in the international market.

